Dry ports/inland terminals and value generation for international cargo and waterways

XX AAPA Latin American Congress
Lima Peru
23 June 2011
Recovering into a ‘New Paradigm’

PORT CHALLENGES
Challenges facing ports

- Economic and functional obsolescence (land values)
- Land constraints
- Lack of capital to expand and modernise
- Inadequate supply chains and infrastructure behind the port in emerging markets
- Need to rationalise assets at the ports to better perform
- Deeper hinterland reach
- Emerging markets share of global GDP to reach 52% in 2015 from 37% in 2000 (IMF)
Factors affecting ports, their development and role

• Shipping and vessel developments
• Ports, logistics, supply chain compression & intermodality
• Regionalisation and port’s filling leadership vacuum
• World infrastructure needs
Changes impacting ports and supply chains

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container share - general cargo market:</td>
<td>48%</td>
<td>67%</td>
<td>72%</td>
</tr>
<tr>
<td>World port teu throughput:</td>
<td>237 million</td>
<td>542 million</td>
<td>1.1 billion?</td>
</tr>
<tr>
<td>Largest container ship (teu):</td>
<td>7,500</td>
<td>14,770</td>
<td>20,000+/-</td>
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</tbody>
</table>

Impact:

- More infrastructure to increase capacity, velocity and throughput to service larger ships - on the same footprint
- Increased intermodal capability through the supply chain and growth nodes
- Need to address ecological and congestion issues resulting from port usage in their respective hinterlands
Impact of 2009 – rationalising the world fleet

**Cause**
- Increased scrapping smaller vessels
- Slow steaming, here to stay
- Large order-book remains, mostly ships of 10,000 teu+ size

**Effect**
- Growth of the average size of the fleet and more port side capacity
- More intermediary warehousing through the supply chain
- Deeper hinterland capability requiring more logistics dedicated property assets

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Container ship order book

- Total order book by teu size range (% of teu capacity)
- 54% are ‘Big Ships’

Source: Drewry

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Big ship economics

• Work as **part of a global network** - need to reach deep into the **hinterland** to be financially viable

• **Inflexible** - could be serious liability in a downturn; the bigger the ship the larger the risk.

• Increased time in port can quickly outweigh economies of scale; limited in number of port of calls.

• **Need** deeper water, bigger cranes, longer berths, bigger container yards, in short – **more port infrastructure and land in the port and throughout the logistics chain**

All require ports and supply chains designed to handle their capacity, requiring **massive capital**.
Average Throughput per terminal estimates – increasing port capabilities required

Source: Drewry
Quay-line capacity benchmarks are influenced by:

- Size of terminal
- Traffic mix eg, transhipment versus gateway
- Dedicated or common user terminal
- Government policy vis-à-vis congestion and competition

Lowest end of scale: 800 teu/metre of quay per annum
Highest end of scale: 1,700 teu/metre of quay per annum

Message: Existing ports will need to increase capacity and throughput using same footprint – inland terminals to play a role.
Quay-line performance benchmarks teu per metre of quay - 2009

Source: Drewry
Yard capacity benchmarks are influenced by:

- Equipment type eg, RTG versus straddle
- Traffic type/dwell time

*Lowest end of scale*: 600 teu per hectare (1 over 2 straddle carriers)

*Highest end of scale*: 2,800 teu per hectare (RMG, 7 high)

*Message*: How much more by taking all non-operational uses inland, dedicating port to velocity and throughput?
Port property – port’s new strategic asset

• 8,000 TEU ship requires 40 hectares to keep container flow inbound smooth; most large ports are land constrained

• Throughput per acre is key to making customers money and satisfied eg, in US about 4,000 – 5,000 TEU/acre yet in Europe and Asia 10,000 TEU/acre and higher is not unusual
It’s increasingly about filling a need…

DRY PORTS/INLAND TERMINALS – WHY?
Sea – Land equation

• Over water transport now a commodity
• Shipping networks and terminals better integrated
• Only place for major cost savings and compression of the supply chain is over land
• Inland terminals are a cornerstone to this strategy
Fundamentals characteristics of Inland Terminals (IT’s)

• Intermodal terminal (road, rail, barge, air)
• Port and port terminal connection through rail, barge, road through high capacity corridor
• Logistics support services and activities in vicinity of IT through clustering, logistics zones, distribution centres, container depots
• Very large land footprints required – to accommodate rail up to 10 tracks, 800 metres long
Sea – Land Equation

- Foreland
- Port Terminal
- Sea/land interface (port)
- Inland terminal
- Hinterland
The supply chain today depends on major land banks
IT Drivers

- Profit
- Compress supply chain for time and cost
- Lack of land or inexpensive land at port
- Lack of capacity for growth at port – need to increase velocity and throughput on same port footprint
- Community congestion and pollution relief
- Deeper penetration into hinterland
- It’s all about reach, time, reliability and price
IT Functions

- Satellite terminal for sea ports
- Increase traffic, capacity and value added services off port on cheaper land banks
- Allows for functions no longer economically feasible at port eg, container consolidation and depots
- Transloading area – domestic distribution
- Distribution hub for a major hinterland
# Types and functions of dry ports

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite terminal</td>
<td>Load Centre</td>
<td>Transshipment</td>
</tr>
<tr>
<td>Near port</td>
<td>Access regional markets</td>
<td>Intermodal connection in hinterland</td>
</tr>
<tr>
<td>Allows for functions not</td>
<td>Intermodal warehousing and logistics</td>
<td></td>
</tr>
<tr>
<td>profitable at expensive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>port land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Container transloading</td>
<td>Logistics parks and free trade zones</td>
<td></td>
</tr>
</tbody>
</table>
Dry ports/inland terminals

Drayage

Barge/Rail

End-haul/direct truck
It’s a real estate play

INLAND TERMINALS –
THE BUSINESS MODEL
IT business models

• Intermodal operator
• Real estate developer/landlord – requires large footprints: 100 to 400 hectares
• Each player focuses on their niche:
  – Rail
  – Warehousing: Smart buildings, cool logistics, distribution space, value added services
• Operational advantages for:
  – Drayage
  – Dedicated private roads
  – Better integrate and plan information systems for terminal operators and throughout supply chain
Integrated time

- Intermodalism is key to:
  - Reduce handling costs
  - Manage inventories
  - Diversify gateways
  - Match transport links to fixed points of non-transport supply chain activities

- Inland terminals are key to intermodalism
Ports – now nodes in an ever expanding and integrating global supply chain

- Within present supply chain a weak link - ports’ inability to process more throughput faster
- Logistics very efficient industry, excellent leadership; transport is fragmented, no clear leader - vacuum needs to be filled, should port authorities step in?
- ‘Just in time’ now ‘integrated time’, requiring more specialised facilities such as ‘fast buildings’
- Property at, near and related to ports is key to addressing these issues
So, which link will your port become in the supply chain, this?
Or this?
Infrastructure’s massive demand for capital

GLOBAL INFRASTRUCTURE REQUIREMENTS & PORTS
Infrastructure trends and opportunities

- OECD estimates US$70 trillion required for infrastructure development and improvement – 2030
- Average size of infra fund now US$3.3b from US$159m in ’03; ‘Dry Powder’ for 2012 – US$100b
- Current financial crisis has resulted in less debt opening door for more equity participation
- Although assets are priced at more realistic levels there are also lower return (IRR) expectations as well in the 15%-18% from 18%-20% in the 2006-2008 period
Forecast global demand

Source: Drewry Shipping Consultants Ltd

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But, forecasted global terminal capacity doesn’t keep up

Capacity becomes an issue again

Source: Drewry Shipping Consultants Ltd
Privatisation potential is not exhausted yet – need to look at the entire port delivery supply chain to attract capital

<table>
<thead>
<tr>
<th>Terminal size band (teu throughput)</th>
<th>Total number of terminals</th>
<th>Number of terminals state owned*</th>
<th>State owned % of total terminals in size class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 100,000</td>
<td>594</td>
<td>307</td>
<td>52%</td>
</tr>
<tr>
<td>100-250k</td>
<td>256</td>
<td>62</td>
<td>24%</td>
</tr>
<tr>
<td>250-500k</td>
<td>160</td>
<td>34</td>
<td>21%</td>
</tr>
<tr>
<td>500-1million</td>
<td>126</td>
<td>23</td>
<td>18%</td>
</tr>
<tr>
<td>Over 1 million</td>
<td>112</td>
<td>20</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Global total</strong></td>
<td><strong>1,248</strong></td>
<td><strong>446</strong></td>
<td><strong>36%</strong></td>
</tr>
</tbody>
</table>

Excludes terminals owned or managed by state owned global operators such as PSA and DP World; but includes terminals where government has a majority ownership.

Source: Drewry
## Comparative yields for infrastructure investments

<table>
<thead>
<tr>
<th>Asset segment</th>
<th>Risk</th>
<th>Avg cash yield (yrs 1-5)</th>
<th>Avg leveraged IRR</th>
<th>Capital appreciation potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll roads</td>
<td>Low</td>
<td>4%-9%</td>
<td>8%-12%</td>
<td>Limited</td>
</tr>
<tr>
<td>Seaports</td>
<td>Medium</td>
<td>4%-7%</td>
<td>15%-18%</td>
<td>Yes</td>
</tr>
<tr>
<td>Merchant power stations</td>
<td>High</td>
<td>4%-12%</td>
<td>15%-25%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Source: JP Morgan*
Moving forward…

OPPORTUNITIES & CONCLUSIONS
Opportunities

• Partner with the private sector to produce port comparative advantages for expansion/modernisation
• Maximisation of port’s value and efficiency
• Integration of supply chain, extension of port life cycle, serving changing industry needs
• Secure leadership role for port authority to influence the transport side of the supply chain to increase cargo throughput throughout
Conclusion

The way to your port’s growth lies deep IN-LAND!
‘Navigating the world of port properties to maximise your port’s value’

Thank you

Aegir Port Property Advisers
Drewry Maritime Advisers